AF 3748

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **Kiyoshi ASAMI, et al.**

Group Art Unit: **3748**

Serial No.: **09/643,912**

Examiner: **NGUYEN, Tu Minh**

Filed: **August 23, 2000**

Confirmation No.: **9494**

For: **CATALYST WARMING CONTROL APPARATUS**

Attorney Docket No.: **001062**
Customer Number: **38834**

SUBMISSION OF APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

February 13, 2004

Sir:

Submitted herewith are an original and two copies of an Appeal Brief in the above-identified U.S. patent application.

If any additional fees are due in connection with this submission please charge or Deposit Account No. 50-1866. This paper is filed in triplicate.

Respectfully submitted,

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In re Application of :

Kiyoshi Asami, et al. : **Examiner Nguyen, Tu Minh**

Serial No. 09/643,912 : **Art Unit 3748**

Filed August 23, 2000:

For Catalyst Warming Control Apparatus

February 13, 2004

APPEAL BRIEF UNDER 37 CFR §1.192

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Honorable Commissioner of Patents

and Trademarks

Washington, D.C. 20231

Dear Commissioner:

This is an appeal brief appealing the final decision of the Office Action mailed on August 19, 2003. A Notice of Appeal accompanied with the requisite fee and a Petition for Extension of Time with the requisite fee have already been filed on December 18, 2003.

(1) Real Party in Interest

The real party in interest is Honda Giken Kogyo Kabushiki Kaisha, located at 1-1, Minamiaoyama 2-Chome, Minato-Ku, Tokyo, Japan.

(2) Related Appeals and Interferences

The Applicant believes there are no related appeals or interferences.

(3) Status of Claims

Pending claims 5-8 are all finally rejected by the Office Action dated August 19, 2003.

No pending claims are allowed.

No pending claims are being objected to.

(4) Status of Amendments

The Applicants hereby appeals the final rejection of the Office Action mailed on August 19, 2003. No After-Final Amendment has been filed.

(5) Summary of Invention

The invention is best understood by correlating the recited claimed language with the drawings and explanations in the specification. A citation provided hereinbelow merely indicates by way of an example a place of support in the specification. There may be other places of support in the specification. The indicated example should not be construed as the metes and bounds of the claims. The metes and bounds of the claims

should only be construed by the invention as disclosed in the patent application as a whole.

Group I

5. A catalyst warming control apparatus including a catalyst temperature sensor 26 for a hybrid vehicle asserting control over the vehicle both when the vehicle is moving and when the vehicle is standing still, having an internal combustion engine E, a generator 1 for generating electric power from an output of the internal combustion engine E, a power storage unit 21 for storing electric power generated by the generator 1, and an electric motor 13 driven by the electric power stored in the power storage unit 21, the hybrid vehicle being driven by at least one of the internal combustion engine E and the motor 13, the catalyst warming control apparatus comprising:

a clutch 12 for performing the connection or disconnection of the transmission of the power between the generator 1 connected to the engine E, and the motor 13;

a coolant temperature detector 23 for detecting an engine temperature of the internal combustion engine E;

a first comparison circuit 18 for comparing the detected engine temperature with a preset first reference value; and

a control circuit 18 for allowing the generator 1 to generate electric power and to store the power in the power storage unit 21 when the internal combustion engine E is driven, and when the detected engine temperature is equal to or below the first reference value.

6. A catalyst control apparatus according to claim 5, further comprising:

a remaining charge detector 22 for detecting a remaining charge of the power storage unit 21 or a value relating to the same; and

a second comparison circuit 18 for comparing the detected result from the remaining charge detector 22 with a present second reference value relating to the remaining charge, wherein the control circuit 18 drives the vehicle by the output from the internal combustion engine E, engages the clutch 12, and allows the generator 1 to generate electric power and to store the power in the power storage unit 21, when the detected result from the temperature detector 23 is equal to or below the reference value according to the output from the first comparison circuit 18, and when the detected result from the remaining charge detector is equal to or below the second reference value relating to the remaining charge according to the output from the second comparison circuit 18.

7. A catalyst warming control apparatus according to claim 5, further comprising:

a remaining charge detector 22 for detecting a remaining charge of the power storage unit 21 or a value relating to the same; and

a second comparison circuit 18 for comparing the detected result from the remaining charge detector 22 with a preset second reference value relating to the remaining charge, wherein the control circuit 18 allows the generator 1 to generate electric power, disengages the clutch 12, and drives the vehicle by the generated electric power and stores the electric power, when the detected result from the temperature detector 23 is equal to or below the first reference value according to the output from the

first comparison circuit 18, and when the detected result from the remaining charge detector 22 is above the second reference value relating to the remaining charge according to the output from the second comparison circuit 18.

8. A catalyst warming control apparatus according to claim 5, wherein the control circuit 18 allows the generator 1 to generate electric power, and drives the vehicle by the motor 13, when the detected result from the temperature detector 23 is equal to or below the reference value according to the output from the first comparison circuit 18, and when the detected result from the remaining charge detector 22 is above the reference value relating to the remaining charge according to the output from the second comparison circuit 18.

(6) Issues

Group I

Whether claims 5-8 are unpatentable under 35 U.S.C. §103(a) based on Tsuzuki et al. (U.S. Patent No. 5,801,499) in view of Tomisawa (U.S. Patent No. 5,606,66).

(7) Grouping of Claims

Group I: Claims 5-8 stand or fall together.

(8) Argument

On the outset, it is the Applicants' understanding that in asserting a rejection, the Office is materially representing that 1) the best prior art references have been applied;

and 2) the merit of the best prior art references support a legal conclusion of unpatentability. It is against these understandings that the Applicants would like to challenge the Office rejection, because the applied prior art of record simply does not objectively and in foresight disclose or teach the claimed invention on the merit.

Group I

Claims 5-8 have finally been rejected under 35 U.S.C. §103(a) as being unpatentable over Tsuzuki et al. (U.S. Patent No. 5,801,499) in view of Tomisawa (U.S. Patent No. 5,606,66).

First Reason Establishing Unobviousness

Independent claim 5 of the present application has positively claimed a catalyst temperature sensor as shown by way of an example in Figure 1, designated as reference numeral 26 that is attached to a catalyst system 24.

In the primary reference Tsuzuki, there is a clear showing of a catalyst temperature sensor 17 in Figure 1. The presence of this catalyst temperature sensor 17 is specifically relied upon in the flowchart as shown in Figure 3, step 13 to determine whether the catalyst temperature is greater than a specific lower limit. Depending upon the outcome of this determination, two distinctly different courses of action will be taken. Therefore, it is apparent that in the view of Tsuzuki, a precise indication of the temperature of a catalyst is of vital importance in determining which one of two courses of action should be taken.

In the secondary reference Tomisawa, there is a specific teaching of not using a

catalytic temperature sensor to determine the temperature of a catalytic converter. In this regard, Tomisawa in column 1, line 64 to column 2, line 5 has positively stated that:

> "there is a method wherein the catalytic converter temperature is measured directly using a temperature sensor. However, since there are variations in temperature within the catalytic converter, it is difficult to determine the optimum location for the temperature sensor and to accurately detect the activated condition of the catalytic converter from the temperature sensor output. Moreover, the installation of a temperature sensor results in additional costs."

Therefore, Tomisawa teaches against the use of a catalyst temperature sensor citing a number of reasons. Specifically, first, Tomisawa has explained that there are variations in temperature within the catalytic converter. This implies that the measured value is undesirable because it may not be representative of the temperature of the catalytic converter as a whole.

Second, it is difficult to determine the optimum location for the temperature sensor and to accurately detect the activated condition of the catalytic converter from the output of the temperature sensor.

Third, there is added cost in the installation of a temperature sensor.

Overcoming to these drawbacks, in Tomisawa, a catalyst temperature sensor is eliminated by resorting to estimating a temperature of the catalyst based on outputs from a coolant temperature sensor of an engine. In this regard, Tomisawa in column 2, lines 9-62 has positively stated that:

> "The present invention addresses the above problems, with the object of providing an apparatus and method that can accurately **estimate** the catalytic converter temperature corresponding to actual vehicle travelling conditions, without incurring additional costs.
>
> Accordingly the automotive catalytic converter temperature **estimation** apparatus and method according to the present invention involves

detecting the engine cooling water temperature at start-up, the vehicle travelling speed, and the engine intake air quantity, and **estimating** the temperature of the exhaust gas purification catalytic converter based on the detected results.

With such a construction, the cooling water temperature at start-up is **presumed** to correspond to the ambient temperature. Moreover, the vehicle travelling speed gives an **estimate** of the surface air speed over the external surface of the catalytic converter, while the engine intake air quantity corresponds to the quantity of exhaust gas introduced to the catalytic converter. The temperature of the catalytic converter can therefore be **estimated** by consideration of the ambient conditions, the surface air speed, and the exhaust gas quantity.

Here, the amount of heat lost from the exhaust gas purification catalytic converter may be **estimated** based on the cooling water temperature at start-up, and the vehicle travelling speed, while the amount of heat absorbed by the exhaust gas purification catalytic converter from engine exhaust gas may be **estimated** based on the engine intake air quantity. The resultant amount of heat of the exhaust gas purification catalytic converter may then be **estimated** based on these **estimated** heat amounts.

With such a construction, the temperature of the catalytic converter can be **estimated** based on an amount of heat lost from the catalytic converter, which amount changes with ambient temperature and surface air speed, and an amount of heat received from the exhaust gas which heating the catalytic converter.

In **estimating** the temperature of the catalytic converter based on the above mentioned heat amounts, an amount of heat determined by subtracting the amount of heat lost from the catalytic converter based on the cooling water temperature at start up and the vehicle travelling speed, from an integral value of the amount of heat absorbed by the catalytic converter from the exhaust gas, may be computed as a value that correlates with the temperature of the catalytic converter.

With such a construction, out of the total amount of heat absorbed by the catalytic converter from the exhaust gases, the remaining amount of heat not lost to the atmosphere from the external surfaces of the catalytic converter may be **presumed** to be a correlation value with the temperature of the catalytic converter." [bold and underline added]

Therefore, it is unmistaken that Tomisawa teaches obtaining a temperature of a catalyst system by estimation, as evidence by the number of the words estimation, presumption and variations of these words bolded and underlined as shown in the quotation above. As it is well recognized by a skilled person in the art as well as clearly addressed by the above-quotation of Tomisawa, in resorting to estimations instead of actual measurements, specific assumptions or presumptions about various operating conditions need to be made. At any moment in time any assumptions or presumption deviate from actual operating conditions, estimation derived therefrom would become unreliable and inaccurate. Therefore, estimation is inherently not as accurate and not as reliable as an actual measurement. Frequently, estimations are used only if they fall within an acceptable margin of error. Therefore, errors are always an inevitable part of any estimation.

In asserting the disclosures and teachings of Tsuzuki and Tomisawa, the Examiner concluded that it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Tsuzuki and Tomisawa, under the motivation that it "would have saved cost and lowered the complexity of the apparatus."

Applicants respectfully disagree for several reasons. First, the primary reference Tsuzuki assertively discloses and teaches using a catalyst temperature sensor. In contrary thereto, the secondary reference Tomisawa assertively discloses and teaches against using a catalyst temperature sensor in favor of estimation. The positions of Tsuzuki and Tomisawa are thus completely opposite.

In MPEP 2144.04, under heading "II. ELIMINATION OF A STEP OR AN ELEMENT AND ITS FUNCTION" and under sub-heading "A. Omission of an Element and Its Function Is Obvious If the Function of the Element Is Not Desired", it is specifically stated that:

> "*Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989) (Claims at issue were directed to a method for inhibiting corrosion on metal surfaces using a composition consisting of epoxy resin, petroleum sulfonate, and hydrocarbon diluent. The claims were rejected over a primary reference which disclosed an anticorrosion composition of epoxy resin, hydrocarbon diluent, and polybasic acid salts wherein said salts were taught to be beneficial when employed in a freshwater environment, in view of secondary references which clearly suggested the addition of petroleum sulfonate to corrosion inhibiting compositions. The Board affirmed the rejection, holding that it would have been obvious to omit the polybasic acid salts of the primary reference where the function attributed to such salt is not desired or required, such as in compositions for providing corrosion resistance in environments which do not encounter fresh water.). See also *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965) (Omission of additional framework and axle which served to increase the cargo carrying capacity of prior art mobile fluid carrying unit would have been obvious if this feature was not desired.); and *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (deleting a prior art switch member and thereby eliminating its function was an obvious expedient)."

Therefore, it is a position of the Court, Board of Patent Appeals and Interferences and the Manual Of Patent and Examination Procedure that omission of an element and its function is obvious if the function of the element is not desired.

In finally rejecting the claimed invention, while the Office asserts Tomisawa as a teaching reference to eliminate a catalyst temperature sensor of Tsuzuki, the Office nevertheless retains the function associated with the catalyst temperature sensor. This is contrary to the position of the Court, MPEP and BPAI that omission of an element would

have been obvious if the function associated with the element is not desired. Therefore, the Office combination does not render the claimed invention obvious.

Second Reason Establishing Unobviousness

If one is unconvinced by the conclusion reached hereinabove, another section of the MPEP should bring a conclusion that the claimed invention is indeed unobvious. In MPEP 2144.04, under the heading "II. ELIMINATION OF A STEP OR AN ELEMENT AND ITS FUNCTION" and under the sub-heading "B. Omission of an Element with Retention of the Element's Function Is an Indicia of Unobviousness", it is clearly stated that:

> "Note that the omission of an element and retention of its function is an indicia of unobviousness. *In re Edge*, 359 F.2d 896, 149 USPQ 556 (CCPA 1966) (Claims at issue were directed to a printed sheet having a thin layer of erasable metal bonded directly to the sheet wherein said thin layer obscured the original print until removal by erasure. The prior art disclosed a similar printed sheet which further comprised an intermediate transparent and erasure-proof protecting layer which prevented erasure of the printing when the top layer was erased. The claims were found unobvious over the prior art because although the transparent layer of the prior art was eliminated, the function of the transparent layer was retained since appellant's metal layer could be erased without erasing the printed indicia.)."

In finally rejecting the claimed invention, the Office combination clearly advocates the elimination of a catalyst temperature sensor. However, the Office combination continues to retain the functions performed by the catalyst temperature sensor. It is the court position and the Manual Of Patent and Examination Procedure position that omission of an element with retention of the element's function is an indication of unobviousness.

Third Reason Establishing Unobviousness

Should the Office action advocated position as expounded in the final Office action prevails; namely, removing the catalyst temperature sensor of Tsuzuki and substitute therefor the estimation system of Tomisawa, the claimed invention is still not rendered obvious, because the claimed invention has specifically recited a catalyst temperature sensor, whereas the Office combination would not have any catalyst temperature sensor. In other words, it is not understood how a Office combination yielding an apparatus without any catalyst temperature sensor can render obvious a claimed invention with a positive recitation of a catalyst temperature sensor.

Fourth Reason Establishing Unobviousness

Furthermore, the outstanding Office Action has positively suggested removing a perfectly workable catalyst temperature sensor 17 from catalyst 16 of Tsuzuki. However, the functionality of Tsuzuki requires the presence of a catalyst temperature sensor. Removing the catalyst temperature sensor would render Tsuzuki inoperable. In this regard, MPEP 2143.01 has specifically stated that:

> "[i]f proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon,* 733 F.2d 900,221 USPQ 1125 (Fed. Cir. 1984)."

Therefore, the claimed invention is not rendered obvious by the asserted prior art combination rejection.

Fifth Reason Establishing Unobviousness

It should also be noted that, in the present invention, when the temperature of the catalyst is low, the engine is driven so as to increase the exhaust temperature by performing the electric power generation to warm the catalyst.

In a hybrid vehicle, the output from the engine is efficiently used so that the energy is collected by the electric power generation. However, Tsuzuki stops the supply of fuel to stop combustion in the engine when the engine is in the idling state. Tsuzuki does not disclose increasing the catalyst temperature by the combustion in the engine, as in the present invention.

Therefore, claims 5-8 are not rendered obvious by the asserted prior art references.

(9) Conclusion

In accordance with the foregoing, it is submitted that the claimed invention is patentably distinguished over the applied prior art of record and the final rejection of claims 5-8 is erroneous. Therefore, reversal of this rejection is respectfully requested.

The Commissioner is hereby authorized to charge any underpayment of fees or credit any overpayment of fees in connection with this communication to Deposit Account 50-2866.

Respectfully submitted,

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February 13, 2004

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(10) Appendix

5. A catalyst warming control apparatus including a catalyst temperature sensor for a hybrid vehicle asserting control over the vehicle both when the vehicle is moving and when the vehicle is standing still, having an internal combustion engine, a generator for generating electric power from an output of the internal combustion engine, a power storage unit for storing electric power generated by the generator, and an electric motor driven by the electric power stored in the power storage unit, the hybrid vehicle being driven by at least one of the internal combustion engine and the motor, the catalyst warming control apparatus comprising:

a clutch for performing the connection or disconnection of the transmission of the power between the generator connected to the engine, and the motor;

a coolant temperature detector for detecting an engine temperature of the internal combustion engine;

a first comparison circuit for comparing the detected engine temperature with a preset first reference value; and

a control circuit for allowing the generator to generate electric power and to store the power in the power storage unit when the internal combustion engine is driven, and when the detected engine temperature is equal to or below the first reference value.

6. (Amended) A catalyst control apparatus according to claim 5, further comprising:

a remaining charge detector for detecting a remaining charge of the power storage unit or a value relating to the same; and

a second comparison circuit for comparing the detected result from the remaining charge detector with a present second reference value relating to the remaining charge, wherein

the control circuit drives the vehicle by the output from the internal combustion engine, engages the clutch, and allows the generator to generate electric power and to store the power in the power storage unit, when the detected result from the temperature detector is equal to or below the reference value according to the output from the first comparison circuit, and when the detected result from the remaining charge detector is equal to or below the second reference value relating to the remaining charge according to the output from the second comparison circuit.

7. A catalyst warming control apparatus according to claim 5, further comprising:

a remaining charge detector for detecting a remaining charge of the power storage unit or a value relating to the same; and

a second comparison circuit for comparing the detected result from the remaining charge detector with a preset second reference value relating to the remaining charge, wherein

the control circuit allows the generator to generate electric power, disengages the clutch, and drives the vehicle by the generated electric power and stores the electric power, when the detected result from the temperature detector is equal to or below the first reference value according to the output from the first comparison circuit, and when

the detected result from the remaining charge detector is above the second reference value relating to the remaining charge according to the output from the second comparison circuit.

8. A catalyst warming control apparatus according to claim 5, wherein the control circuit allows the generator to generate electric power, and drives the vehicle by the motor, when the detected result from the temperature detector is equal to or below the reference value according to the output from the first comparison circuit, and when the detected result from the remaining charge detector is above the reference value relating to the remaining charge according to the output from the second comparison circuit.

(11) Table of Authority

Cases

- Other Authorities